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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/695,796

10/30/2003

Kazuyoshi Torii

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10/04/2005

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EXAMINER

WALFORD, NATALIE K

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 10/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

OK

Office Action Summary	Application No. 10/695,796	Applicant(s) TORII ET AL.	
	Examiner Natalie K. Walford	Art Unit 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Abe et al. (US 5,811,915).

Regarding claim 1, Abe discloses a method for manufacturing a spark plug, which includes a tubular metallic shell (FIG. 1, item 1), a tubular insulator (FIG. 1, item 2) extending in an axial direction of the metallic shell and fixed in the metallic shell with opposite ends of the insulator protruding from corresponding opposite ends of the metallic shell, a center electrode (FIG. 1, item 3) extending in the axial direction of the metallic shell and fixed in the insulator with a distal end of the center electrode protruding from a distal end of the insulator and with a rear end of the center electrode fixed in the insulator, and a ground electrode (FIG. 1, item 4) with one end of the ground electrode fixed to the metallic shell and with the other end portion of the ground

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electrode and the center electrode forming a discharge gap there between, and in which at least one of the center electrode and the ground electrode includes an electrode base metal and a chip (FIG. 1, item 5) provided on the electrode base metal at a position for forming the discharge gap (FIG. 1, item 6) and formed of a spark erosion resistant material, the method including: (1) providing a chip including a flange portion and a protrusion protruding from a first face of the flange portion; (2) tentatively joining, through resistance welding (column 5, lines 37-41), a second face of the flange portion opposite the protrusion to a joint face of the electrode base metal of at least either one of the center electrode and the ground electrode, (3) laser-welding the flange portion to the joint face such that a weld portion is formed between the electrode base metal and the chip to reach points on the second face of the flange portion (column 6, lines 6-14), the points being located inward of corresponding intersections of the second face of the flange portion and imaginary extension lines of generatrices of a side surface of the protrusion.

Regarding claim 2, Abe discloses the method for manufacturing a spark plug as claimed in claim 1, wherein the joint face is located on the electrode base metal of the ground electrode on a side toward the discharge gap (FIG. 1).

Regarding claim 3, Abe discloses the method for manufacturing a spark plug as claimed in claim 2, wherein D represents a maximum distance between the intersections, the weld portion is present so as to extend to a distance $D/5$ or more inward of the intersections as measured on the second face (column 5, lines 17-18).

Regarding claim 4, Abe discloses the method for manufacturing a spark plug as claimed in claim 1, which includes providing in step (1) a plate-like intermediate member (FIG. 2, item A or B) having at least one of a melting point and linear expansion coefficient falling between that of the electrode base metal and that of the chip (column 6, lines 42-47), and having a face larger than the second face of the flange portion; and the joint face being located on a side toward the discharge gap (FIG. 2); and in step, (2), providing the intermediate member between the joint face and the chip (FIG. 2).

Regarding claim 5, Abe discloses the method for manufacturing a spark plug as claimed in claim 4, which includes, in step (2), after the intermediate member is tentatively joined to the joint face through resistance welding, tentatively joining the second face of the flange portion to the intermediate member through resistance welding (column 6 lines 35-41).

Regarding claim 6, Abe discloses the method for manufacturing a spark plug as claimed in claim 1, which includes locating the joint face on the electrode base metal of the ground electrode on a side toward the discharge gap, and welding the chip to the ground electrode while the ground electrode is bent away from the distal end of the center electrode (column 5, lines 65-68 thru column 6, lines 1-5).

Regarding claim 7, Abe discloses in figure 1, a spark plug including a tubular metallic shell (item 1), a tubular insulator (item 2) extending in an axial direction of the metallic shell and fixed in the metallic shell with opposite ends corresponding opposite ends of the metallic shell, a center electrode (item 3) extending in the axial direction of the metallic shell and fixed in the insulator with a distal end of the center electrode

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protruding from a distal end of the insulator and with a rear end of the center electrode fixed in the insulator, and a ground electrode (item 4) with one end of the ground electrode fixed to the metallic shell and with the other end portion of the ground electrode and the center electrode forming a discharge gap (item 6) there between, at least one of the center electrode and the ground electrode including an electrode base metal and a chip (item 5) provided on the electrode base metal at a position for forming the discharge gap and formed of a spark erosion resistant material, wherein the chip includes flange portion and a protrusion protruding from a first face of the flange portion (FIG. 2, items 3c or 4c); a second face of the flange portion opposite the protrusion is tentatively joined, through resistance welding, to a joint face of the electrode base metal of at least either one of the center electrode and the ground electrode, the joint face being located on a side toward the discharge gap; and the flange portion is laser-welded to the joint face such that a weld portion (FIG. 2, item A or B) is formed between the electrode base metal and the chip to reach points on the second face of the flange portion, the points being located inward of corresponding intersections of the second face of the flange portion and imaginary extension lines of generatrices of a side surface of the protrusion.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (US 5,811,915).

Regarding claim 8, Abe discloses the spark plug as claimed in claim 7, but does not expressly disclose that the weld portion contains components of the chip in an amount in the range of from 20% by mass to 80% by mass, as claimed by the Applicant. Abe does not expressly disclose the limitation, although it would have been obvious to one of ordinary skill in the art that the weld portion must contain components of the chip in the range of from 20% by mass to 80% by mass because when the weld portion is formed, it becomes possible to reduce the thermal stress caused in the welding portion and properly maintain the connecting strength between the center electrode and the chip (column 7, lines 31-34).

Regarding claim 9, Abe discloses the spark plug as claimed in claim 8, but does not expressly disclose that the weld portion contains components of the chip in an amount in the range of from 30% by mass to 60% by mass. Abe does not expressly disclose the limitation, although it would have been obvious to one of ordinary skill in the art that the weld portion must contain components of the chip in the range of from 30% by mass to 60% by mass because when the weld portion is formed, it becomes possible

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to reduce the thermal stress caused in the welding portion and properly maintain the connecting strength between the center electrode and the chip (column 7, lines 31-34).

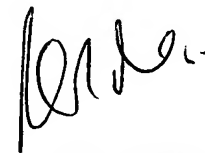
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Natalie K. Walford whose telephone number is (571)-272-6012. The examiner can normally be reached on Monday-Friday, 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571)-272-2457. The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

nkW



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